

What is claimed is:

1. An expandable intraluminal endoprosthesis comprising a tubular member having a first and second end and a wall surface disposed between said first and second end, the wall having a substantially uniform thickness and having a first diameter in a first, unexpanded state which permits intraluminal delivery of the member into a lumen of a body passageway, particularly a blood vessel, which member is capable of acquiring a second diameter in an expanded and deformed state upon the application from the interior of the tubular member of a radially outwardly extending force, which second diameter is variable and dependent on the amount of said force applied to the tubular member, whereby the tubular member may be expanded and deformed to expand the lumen of the body passageway, wherein at least in said first unexpanded state at least a part of said wall of said tubular member comprises a substantially continuous structure of mutually staggered undulations [which has been separated from a tube wall,] wherein said substantially continuous structure comprises at least one pattern which advances substantially helically along a longitudinal axis of said tubular member and in that said structure comprises connection elements connecting adjacent undulations, which connection elements are an integral extension of the undulations which they connected.

2. Endoprosthesis according to claim 1, wherein said structure comprises a continuous filament [which is

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separated from a tube wall, said adjacent undulations are staggered in a substantially helical configuration advancing along the longitudinal axis of the tubular member to form one of said at least one substantially helical pattern within said structure, and a first helical turn of said filament around said longitudinal axis of said tubular member is connected to an adjacent second such turn of said filament by means of at least one of said connection elements, being an integral extension of said filament.

3. Endoprosthesis according to claim 2, wherein adjacent turns of said filament are connected to one another by means of a number of connection elements less than the number of undulations in said turns.

4. Endoprosthesis according to claim 2, wherein said structure comprises a number of turns of said filament whereby the connection elements to subsequent turns are radially shifted to form at least one further substantially helical pattern of said at least one substantial helical pattern within said structure.

5. Endoprosthesis according to claim 4, wherein the connection elements to subsequent turns are radially shifted by approximately half undulation pitch distance.

6. Endoprosthesis according to claim 4, wherein at least a portion of the structure comprises a number of connection elements which are substantially equally divided in

each turn of said filament and in that connection elements in successive turns are helically shifted by approximately one undulation pitch distance.

7. Endoprosthesis according to claim 4, wherein said one and further substantially helical patterns run in substantially different helical directions along the longitudinal axis.

8. Endoprosthesis according to claim 2, wherein the undulations in said filament have a first mutual pitch in a first of said turns of said filament and a second mutual pitch in a second of said turns, the first and second pitch being different from each other.

9. Endoprosthesis according to claim 1, wherein at least a part of at least one undulation in at least one turn of said at least one substantially helical pattern has an increased amplitude, while at least the adjoining part of an adjoining undulation in an adjacent turn has a correspondingly decreased amplitude.

10. Endoprosthesis according to claim 1, wherein a first pair of adjacent undulations of said structure is connected by means of a first connection element, in that a second pair of adjacent undulation of said structure is connected by means of a second connection element, in that in between said first and second pair of connection elements at least one undulation of an intermediate pair of undulations

has an increased amplitude, to bridge at least part of the length of said first and second connection element.

11. Endoprosthesis according to claim 1, wherein said structure comprises at least one series of connection elements which are substantially regularly distributed over at least part of the length of said tubular member and in that successive connection elements within said at least one series are radially shifted to form one substantially helical pattern of said at least one substantially helical pattern within said structure.

12. Endoprosthesis according to claim 11, wherein said successive connection elements are mutually connected by an elongated member which has a greater length than the linear distance between said connection elements in said first unexpanded state of the structure, in order to impart radially expandability to the structure.

13. Endoprosthesis according to claim 12, wherein said elongated member comprises a substantially S-curved bent.

14. Endoprosthesis according to claim 13, wherein said substantially S-curved bent is orientated substantially parallel to the center axis of the longitudinal axis of the tubular member.

15. Endoprosthesis according to claim 1, wherein at least some of the connection elements comprise a strut diagonally interconnecting a first side of a first adjoining

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undulation to an opposite side of a second adjoining undulation, the strut being entirely integral with said adjoining undulations and having a direction different to the helical direction of said one substantially helical pattern within said structure.

16. Endoprosthesis according to claim 15, wherein the first side of said first undulation, said opposite side of said second undulation and said strut have a first filament width and in that the opposite side of said first undulation and the first side of the second undulation have a second filament width, the first filament width being larger than the second filament width.

17. Endoprosthesis according to claim 15, wherein said strut connecting opposite sides of adjoining undulations has a substantially S-shaped structure.

18. Endoprosthesis according to claim 1, wherein the connection elements each comprise two intersecting struts which are entirely integral with each other and with the adjoining undulations which they connect.

19. Endoprosthesis according to claim 18, wherein (a) first of said intersecting struts extends substantially in the helical direction of said at least one substantially helical pattern and has a strut width which is larger than a strut width of the other of said intersecting struts.

20. Endoprosthesis according to claim 1, wherein the tubular body comprises a central portion, two outer portions at opposite ends of said tubular member and at least one intermediate portion in between the central portion and each of said end portions, the different portions being designed according to their specific function in the device.

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